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INVISIBLE MARKING APPARATUS

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BACKGROUND OF THE RELATED ART

[0001] The present invention relates to marking implements and other marking devices used to protect confidential information. It finds particular application in conjunction with writing and marking systems utilizing invisible marking compositions (e.g. invisible ink) and ultraviolet (UV) detection lighting sources whereby the invisible marking composition becomes visible when exposed to UV light.

[0002] Conventionally, UV light sources have been used to illuminate "hidden" confidential information. For example, confidential information has been impregnated onto credit cards and automobile driver's licenses with UV sensitive ink. Accordingly, UV light sources have been used to illuminate this otherwise hidden information in order to validate the authenticity of the confidential information as well as the authenticity of the card itself.

SUMMARY OF THE DISCLOSED EMBODIMENT(S)

[0003] The present invention disclosed and claimed herein, in one aspect thereof, comprises marking kit including a housing, a marking implement to dispose an invisible mark onto a substrate and an ultraviolet light source disposed in communication with the housing to illuminate the invisible mark on the substrate.

[0004] In accordance with an embodiment, the invisible mark is created using an ultraviolet-sensitive ink.

[0005] In one embodiment, the marking implement includes a barrel or shaft, a well to hold a quantity of an ultraviolet light-sensitive composite wherein the well is disposed within the barrel and a tip or opening disposed on one end of the barrel to permit the discharge of the ultraviolet light-sensitive composite onto a substrate.

[0006] In another embodiment, the housing includes a cavity to store the marking implement and a fastening means (e.g. Velcro™) to secure the marking implement to the housing.

[0007] In yet another embodiment, the marking kit includes a power source to provide power to illuminate the ultraviolet light source. The power source is an alternating current (AC) or direct current (DC) power source. As well, an AC/DC converter to convert an input power to the ultraviolet light source from AC to DC may be provided.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] It will be appreciated that the illustrated boundaries of elements (e.g. boxes, groups of boxes, or other shapes) in the figures represent one example of the boundaries. One of ordinary skill in the art will appreciate that one element may be designed as multiple elements or that multiple elements may be designed as one element. An element shown as an internal component of another element may be implemented as an external component and vice versa.

[0009] For a more complete understanding of the present apparatus and the advantages thereof, reference is now made to the following description taken in conjunction with the accompanying drawings in which:

FIG. 1 illustrates a front perspective view of an apparatus depicting a housing and an attached marking implement in accordance with a disclosed embodiment;

FIG. 2 illustrates a rear perspective view of an apparatus depicting an ultraviolet (UV) light source in accordance with a disclosed embodiment;

FIG. 3 illustrates a front perspective view of an apparatus depicting a housing and marking implement internally contained within a cavity in accordance with a disclosed

embodiment;

FIG. 4 illustrates a front perspective view of an apparatus depicting a housing and marking implement external of a cavity in accordance with a disclosed embodiment;

FIG. 5 illustrates a front perspective view of a case in accordance with a disclosed embodiment;

FIG. 6 illustrates a front perspective view of an open case revealing the apparatus contained therein;

FIG. 7 illustrates a cross-sectional view of a combination marking implement and UV light assembly in accordance with a disclosed embodiment; and

FIG. 8 illustrates a cross-sectional view of a combination marking implement and UV light assembly in accordance with a disclosed embodiment.

DETAILED DESCRIPTION OF THE EMBODIMENT(S)

[0010] The following includes examples of various embodiments and/or forms of components that fall within the scope of the present apparatus that may be used for implementation. Of course, the examples are not intended to be limiting and other embodiments may be implemented without departing from the spirit and scope of the invention.

[0011] Briefly describing one embodiment of the present apparatus, it provides for a combination of a marking implement and ultraviolet (UV) light source. Specifically, one embodiment is directed toward a marking implement configured to transfer an ultraviolet light-sensitive composite onto a substrate. Additionally, in accordance with one embodiment, an ultraviolet light source is provided to reveal the markings created by the marking implement.

[0012] In other words, a marking implement capable of transferring an invisible mark onto a substrate is provided. Further, a UV light source may be used to reveal the hidden messages scribed onto the substrate. It is contemplated that the present apparatus may be used to protect and maintain secrecy in any desired manner. For example, the present apparatus may be used to protect confidential information including but, not limited to, account passwords, personal information, social security numbers, credit card numbers, driver's license numbers, bank account information, safe combinations, trade secrets, phone numbers or the like.

[0013] It will be appreciated that, in accordance with an embodiment, the "invisible" mark scribed onto a substrate may be subtly visible at the time of scribing. Thereafter, the mark will become virtually invisible to human vision. For example, a mark may appear slightly yellowish in color when scribed. Upon drying or curing, the pigment may disappear thereby causing the mark to appear invisible. Throughout this disclosure and claims, "invisible" is to mean "impossible or nearly impossible to see; imperceptible by the eye."

[0014] Illustrated in **FIG. 1** is a front perspective view of an apparatus **100** depicting a housing **110** and a marking implement **120** in accordance with a disclosed embodiment. The apparatus components shown in **FIG. 1** generally represent the apparatus **100** and may have any desired configuration and/or placement without departing from the spirit, scope and/or operation of the present apparatus.

[0015] With continued reference to **FIG. 1**, the apparatus **100** includes the housing **110** containing a UV light source (not shown), the marking implement **120**, and an optional carrying handle or strap **130**. Additionally, as shown in **FIG. 1**, the housing **110** may be optionally equipped with a fastening means **140** to fasten the marking implement **120** to the housing **110**. Although the fastening means **140** depicted in **FIG. 1** is a clamping means, an artisan will appreciate that any fastening means known in the art may be used without departing from the spirit and scope of the present apparatus. For

example, alternate fastening means such as Velcro™, tape, pins, male/female connectors, or the like may be used in accordance with alternate embodiments of the present apparatus.

[0016] Further, as illustrated in **FIG. 1**, the apparatus **100** may be equipped with a switching means **150** to control the power to illuminate the UV light source (not shown). Of course, one skilled in the art will appreciate that any switching means known in the art may be used without departing from the spirit and scope of the present apparatus.

[0017] **FIG. 2** illustrates a rear perspective view of the apparatus **100** depicting a UV light source **210** in accordance with a disclosed alternate embodiment. As discussed with reference to **FIG. 1**, the UV light source **210** may be operatively connected to a power source (not shown) via switching means **150** (shown in **FIG. 1**).

[0018] Again with reference to **FIG. 1**, in operation, a user may remove the marking implement **120** from the fastening means **140** in order to scribe an invisible mark onto a substrate (e.g. paper medium). It will be appreciated that the marking implement **120** as disclosed in **FIG. 1** may be any marking means known in the art capable of transferring a UV-sensitive mark onto a substrate. Additionally, it will be appreciated that the housing 110 may include a cavity (not shown) to store a quantity of paper medium (e.g. post-it™ note pad).

[0019] In other words, the marking implement **120** may be an ink pen (as shown) configured to transfer a UV-sensitive "invisible-ink" composite onto a substrate or surface (e.g. paper). It will be appreciated that other writing implements known in the art may be used in accordance with the present apparatus without departing from the spirit and scope of the present invention. For example, a wax or crayon-type marking implement constructed of a UV-sensitive composite may be used.

[0020] Once an invisible mark is transferred from the marking implement **120** to a substrate, the UV light source **210** (of **FIG 2**) may be used to illuminate the secret

message. It will be appreciated, that any UV light source may be used to reveal the invisible markings scribed with the marking implement **120**.

[0021] Continuing with the embodiment, the user may operate the switch means **150** in order to illuminate the UV light source **210**. As illustrated in **FIG. 1**, upon activating switching means **150**, power may be transferred from a power source (not shown) to illuminate the UV light source **210**. Once illuminated, the UV light source **210**, may be suitably configured to react with the UV-sensitive mark in order to reveal the hidden message.

[0022] It will be appreciated that the power source (not shown) may included within the housing **110** and be any alternating current (AC) or direct current power source know in the art suitably adapted to illuminate the UV light source **210**. Additionally, it will be appreciated that the present apparatus **100** may be suitably configured to operate with either AC or DC power supplied. Moreover, the apparatus may be equipped with an AC/DC power converter in order to convert standard AC power to a suitable DC level in order to illuminate the UV light source **210**. An alternate embodiment of the present apparatus **100** may be suitably configured to operate using solar or light power in order to illuminate the light source **210**.

[0023] **FIG. 3** illustrates an alternate embodiment of the present invention. As illustrated in **FIG. 3**, an alternate apparatus **300** is shown. Specifically, the apparatus **300** may be configured to include a housing **310** equipped with a cavity to store the marking implement (not shown). As shown in **FIG. 3**, a lid **320** may be disposed to secure the marking implement (not shown) in the cavity (not shown) of the housing **310**.

[0024] **FIG. 4** illustrates a front perspective view of the apparatus **300** depicting the housing **310** and a marking implement **410** external of the internal cavity (not shown) in accordance with a disclosed embodiment. As shown in **FIG. 4**, the lid **320** is illustrated in an open position in order to permit the marking implement **410** to be removed from the cavity (not shown) internal to the housing **310**.

[0025] **FIG. 5** illustrates a front perspective view of a case **500** in accordance with a disclosed embodiment. The case **500** may be suitably configured to house the apparatus **100** of **FIG. 1** as well as other embodiments of the present invention. As illustrated in **FIG. 5**, the case **500** may be equipped with a flap **510** to enclose the apparatus **100** into the case **500**, a marking implement sheath **520** to secure the marking implement **120** and a carrying strap **530** to assist in carrying the apparatus **100**.

[0026] **FIG. 6** illustrates a front perspective view of an open case **500** revealing the apparatus **100** contained therein. As illustrated in **FIG. 6**, the flap **510** is shown in the open position. As well, the marking implement **120** is shown partially withdrawn from the marking implement sheath **520**. It will be appreciated that any flap fastening means **610** may be used in accordance with the present apparatus without departing from the spirit and/or scope described herein. For example, Velcro™, snaps or the like may be used in accordance with the present case **500**.

[0027] Now with reference to **FIG. 7**, a cross-sectional view of a combination marking implement and light assembly in accordance with an alternate disclosed embodiment is shown. Specifically, **FIG. 7** illustrates a single marking apparatus **700** including a shaft **710** having a cavity **720** disposed throughout the length of the shaft **710**. In other words, the shaft **710** may be configured as a hollow barrel whereas the hollow portion is the cavity **720**. It will be appreciated that the marking implement of **FIGS. 1-6** may be constructed in the same manner as the marking portion described with reference to **FIG. 7** herein.

[0028] A well **730** to hold a quantity of a UV light-sensitive composite (e.g. "invisible ink") may be suitably disposed within the cavity **720** whereby the UV light-sensitive composite may be transferred onto a substrate via a tip or opening **740**. It will be appreciated that the well **730** to store a quantity of a UV light-sensitive composite (e.g. ink, wax) may be constructed in a replaceable refill fashion in accordance with other embodiments.

[0029] Continued reference to **FIG. 7** illustrates a UV light source **750** in communication with the shaft **710**. Additionally, a switching means **760** may be disposed opposite the opening **740** as illustrated. In operation, upon activating the switching means **760**, the UV light source **750** illuminates providing UV light rays **770** as shown in **FIG. 7**. As previously discussed, the UV light rays **770** may be used in order to illuminate and reveal previously scribed invisible markings containing UV light-sensitive composites.

[0030] An alternate embodiment of a marking apparatus is illustrated in **FIG. 8**. The basic construction and operation of the apparatus **800** of **FIG. 8** is the same as previously discussed with reference to **FIG. 7** above. However, the apparatus **800** of **FIG. 8** employs an alternate embodiment of a UV light source **810** and corresponding switching means **820**.

[0031] Specifically, a UV light source **810** may be operated via a switching means **820**. As shown in **FIG. 8** and different from the apparatus **700** of **FIG. 7**, the direction of the UV light rays **830** of the alternate embodiment are directed opposite the tip or opening **840** of the apparatus **800**.

[0032] It will be appreciated that the switching means **760** and **820** of **FIG. 7** and **FIG. 8** respectively may be any switching means known in the art. For example, switching means such as toggle, pressure sensitive switches or the like may be used without departing from the spirit and scope of the present apparatus.

[0033] While the present system has been illustrated by the description of embodiments thereof, and while the embodiments have been described in considerable detail, it is not the intention of the applicants to restrict or in any way limit the scope of the appended claims to such detail. Additional advantages and modifications will readily appear to those skilled in the art. Therefore, the system, in its broader aspects, is not limited to the specific details, the representative apparatus, and illustrative examples

shown and described. Accordingly, departures may be made from such details without departing from the spirit or scope of the applicant's general inventive concept.

[0034] Although the preferred embodiment has been described in detail, it should be understood that various changes, substitutions and alterations can be made therein without departing from the spirit and scope of the invention as defined by the appended claims.